Summer 6-26-2019

Analysis of Online Comments Characteristics of QQ Music Top Songs: Based on Research of Implicit Network Structure

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Abstract: This article analyzes reviews of listed songs on QQ music platform. According to the popular index of QQ music peak list, we compare the top five popular songs with those unpopular ones. Our work embodies text and sentiment analysis for evaluating the content and activity of the reviews, social network analysis for evaluating structural characteristics of the networks, and finally the K-means clustering method for getting features from the classified nodes for further comparison. The conclusion is that people prefer to comment on popular songs; The popularity of songs is not related to whether people prefer to use positive text for song comments; Movies, TV shows, variety shows, and other video media can trigger commentators' discussions about a song; The implicit network of popular songs' comments has scale-free, small world characteristics; The implicit network of popular songs' comments has more opinion leaders and information disseminators compared with general songs', also the ordinary commentators in popular songs network are more diverse.

1. RESEARCH QUESTION

User interactions on social media platforms produce many effects, and one of them is observed as popularity. In this work we study one of the biggest music platforms in China – QQ Music, and try to find out the mechanism that online user comments influence music popularity from an implicit network aspect.

2. MAJOR RESEARCH FINDINGS

Use text analysis to segment the comments of every music and then count the word frequency; Use emotional analysis to calculate the emotional score of every comments network; we find that people often review from the perspective of singers, arrangers, lyrics, movies and TV shows. People prefer to comment on popular songs, but the popularity of songs is not related to whether people prefer to use positive text for song comments.

We use Gephi software to calculate the average path length and average clustering coefficient, The data shows that all the popular songs are in line with the characteristics of the small world, but some networks of general songs are too small, resulting in an average clustering coefficient of 0, which does not meet the characteristics of the small world; Next we export the distribution data of the network nodes and construct a regression algorithm, it is found that the implicit networks of popular song sample have scale-free feature; the implicit networks of general song sample do not have scale-free feature.

Finally in this paper, the k-means clustering algorithm is used to cluster the weighted degree, closeness centrality and between centrality of the song review implicit network. Among the popular song sample, 53492 nodes belong to group 0; 1 node belongs to group 1, weighted degree of the node is 8105, the closeness centrality of the node is 0.512334, the between centrality of the node is 1182429.243; 1718 nodes belong to group 2; 8 nodes belong to Group 3, 1645 nodes belong to group 4. Group 0 has a relatively low weighted degree, a very high closeness centrality and a relatively low between centrality; Group 1 has a very high weighted degree, a medium closeness centrality and a very high between centrality; Group 2 has a relatively low weighted degree, a relatively low closeness centrality and a relatively high between centrality; Group 3 has a

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relatively high weighted degree, a relatively low closeness centrality and a relatively high between centrality; Group 4 has a very low weighted degree, relatively high closeness centrality and between centrality.

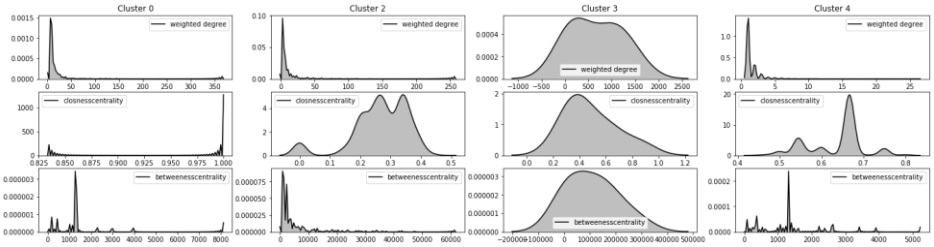

Figure 1. K-means cluster of popular song sample

Among the general song sample, 427 nodes belong to group 0; 3 nodes belongs to group 1; 20 nodes belong to group 2; 1 node belong to Group 3, 12 nodes belong to group 4.Group 0 has a relatively low weighted degree and a relatively low between centrality, the closeness centrality is 0; Group 1 has a relatively high weighted degree, a relatively low closeness centrality and a very high between centrality; Group 2 has a relatively low weighted degree, a relatively low closeness centrality and a relatively high between centrality; Group 3 has a very high weighted degree, a relatively low between centrality, the closeness centrality is 1; Group 4 has a relatively low weighted degree, relatively high closeness centrality, the between centrality is 0

3. CONCLUSIONS

1. People prefer to comment on popular songs, but the popularity of songs is not related to whether people prefer to use positive text for song comments.

2. People tend to choose to publish their own comments from the perspective of singers, arrangers, and lyrics. At the same time, songs may also trigger commentators' discussions because of movies, TV shows, variety shows, and other video media.

3. The implicit network of popular songs' comments has a scale-free feature. A small number of nodes in the network get a lot of replies, and most of the nodes get a small amount of replies, at the same time, the implicit network of popular songs' comments has small world characteristics, the local structure of the network has obvious grouping characteristics, As for the implicit network of general songs' comments, because the network size is small, or the network node has little or no contact with other nodes except the song node, the network structure does not have the characteristics of scale-free and small world.

4. In the implicit network of popular songs' comments when compared with the implicit network of general songs' comments, there are more opinion leaders and information disseminators (Group0, Group3). These users are at the key nodes of the network and have high prestige. At the same time, the ordinary commentators are more diverse in implicit network of popular songs' comments, and there are many users with different preferences. However, the number of opinion leaders in the implicit network of general songs' comments is much smaller and the reputation is not high (Group1), besides the type of the common users is relatively simple, What's more, the willingness to interact is very low.

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